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Level of awareness and perception of parents about amblyopia in children in AL-Baha city, Kingdom of Saudi Arabia (KSA)

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ABSTRACT

Background: Amblyopia is the most common cause of monocular visual loss in children. It can be easily treated or prevented if recognized early, but due to lack of knowledge about the disease, it can be easily missed. **Objectives:** The aim of this study was to assess parents' perception and awareness about amblyopia among children in terms of causes, risk factors, symptoms, diagnosis and management at Al-Baha region, Kingdom of Saudi Arabia (KSA). **Methods:** A cross-sectional study that used an online questionnaire targeting parents of Al-Baha city, Saudi Arabia. The statistical analysis was done using the statistical package for the social sciences (SPSS, version 27.0). **Results:** A total of 342 responses were received, all of the participants were from Al-Baha region. Based on a total of 13 questions regarding lazy eye disease, only 25.1% of participants had good knowledge about the disease. The most commonly reported source of knowledge to provide good knowledge about amblyopia was "ophthalmologist". Most of the participants were females (83.3%) and they were observed to be more knowledgeable about the disease than males (16.7%). Moreover, more than 50% of the participants showed a lack of knowledge about amblyopia's causes, risk factors, diagnosis and management. **Conclusion:** The results are consistent with what previous studies concluded, which is a significant lack of knowledge regarding amblyopia. Thus, spreading awareness about the disease is crucial for early identification and treatment which will eventually decrease the burden of the disease on children and prevent unilateral visual impairment.

Keywords: Amblyopia, Saudi, Eye disease, Perception, Awareness, Knowledge



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1. INTRODUCTION

Untreated decreased visual acuity due to visual abnormalities at an early age can lead to amblyopia (Alsaqr and Masmali, 2019). Amblyopia is defined as functional vision loss due to abnormal visual development. It is the leading cause for vision impairment in children and is caused by visual abnormalities such as having uncorrected high refractive errors, anisometropia, unilateral strabismus, bilateral isometropia, unilateral, or bilateral astigmatism (Bukhari et al., 2018). There are less common etiologies that may cause amblyopia such as having corneal injuries, corneal dystrophy, congenital cataract, congenital ptosis, congenital glaucoma, and retinopathy of prematurity (Aldebasi, 2015). It was found that neonates and up to 7 years children are the most susceptible for developing amblyopia (Bukhari et al., 2018). The condition can cause permanent effects to the vision of children if not treated early (Alsaqr and Masmali, 2019). It is clear that amblyopia can negatively affect the quality of life of the child through adulthood and may continue till death. Health related quality of life can be markedly reduced as reported by patients and their relatives. Immediate and long term effects such as stigma of wearing glasses or covering the eye, or even inability to get employed in specific occupations such as military service (Carlton and Kaltenthaler, 2011). The issue has been addressed; Saudi Arabia has showed lack of knowledge regarding amblyopia, which is considered a treatable condition. The previous study has recommended paying more attention toward the condition (Basheikh et al., 2021).

As Amblyopia can impact; the quality of life of children due to its effect on their learning process, their ability to perform physical and social activities, and career choices. Moreover, it can cause depression and anxiety in amblyopic patients. Parents' knowledge of amblyopia and the recognition of the role of early diagnosis are important in the early management to prevent visual impairment. Therefore, this study aimed to investigate the level of parent's perception of amblyopia at Al-Baha city, Saudi Arabia.

2. METHODOLOGY

Study design

Analytical cross-sectional study was investigating the perception towards amblyopia using a self-reported online questionnaire from February 2021 to April 2021.

Study population

Al-Baha residents who have children were the population of interest. The exclusion criteria were non-Arabic speakers, illiterates, and caregivers with no relation to the child such as maids or nurses.

Sample size

Using a confidence level of 95% (Z statistics is 1.96), margin of error =5% and population of (411,888) according to general authority for statistics in Saudi Arabia. Our sample size was calculated to be (385).

Data Collection

The questionnaire was developed after an extensive literature review. Authors have added more questions that fit the local population and may reveal hidden factors related to the culture. The questionnaire was distributed through social media (WhatsApp, Twitter, and Telegram).

Statistical analysis

The statistical package for the social sciences is (SPSS, version 27.0). All continuous variables were skewed; for which median and interquartile range (IQR) were used to summarize the variables. Frequency tables and proportions were used to summarize categorical variables. Total score for 13 questions was done to evaluate the knowledge of the participants regarding lazy eye. For the total score, Mann-Whitney and Kruskal-Wallis tests were used to compare between groups of categorical variables. The total score was recoded to dichotomous outcome variable poor and good levels of knowledge. The new binary outcome was tested using Chi-square test. P-values less than 0.05 were considered significant.

Ethical considerations

The current study is approved by the research committee at the college of medicine, Al-Baha University, Saudi Arabia. The online link contained a statement explaining the purpose of the study and obtaining consent from each participant. All the data were handled anonymously and used for research purposes only.

3. RESULTS

Total of (342) responses were coded and analyzed. Participants were mainly informants as the target population would be children. The majority (89.8%) were parents. All the participants were from Al-Baha region, while other sociodemographic characteristics are shown in (Table 1). A total of 13 questions were summed up to produce a total score measuring the knowledge about lazy eye. The median score for knowledge was 5/13 with interquartile range of (IQR=2-8). According to the median, scores were categorized into poor and good levels of knowledge. Only one quarter 25.1% had good level of knowledge regarding lazy eye. Sociodemographic variables were tested for significant associations with level of knowledge; results are shown in (Table 1). The questions of lazy eye questions and other knowledge questions are demonstrated in (Table 2).

Table 1 Sociodemographic characteristics and their association with lazy eye knowledge

Group	N = 342	Level of knowledge		Total*	P-value**
		Poor (%)	Good (%)		
Gender	Male	37 (14.5%)	20 (23.3%)	57 (16.7%)	0.045
	Female	219 (85%)	66 (76.7%)	285 (83.3%)	
Age	18-25	34 (13.3%)	14 (16.3%)	48 (14.0%)	0.395
	26-35	56 (21.9%)	19 (22.1%)	75 (21.9%)	
	36-45	80 (31.3%)	33 (38.4%)	113 (33.0%)	
	46-55	77 (30.1%)	19 (22.1%)	96 (28.1%)	
	>55	9 (3.5%)	1 (1.2%)	10 (2.9%)	
Nationality	Saudi	197 (77.0%)	59 (68.6%)	256 (74.9%)	0.123
	Non-Saudi	59 (23.0%)	27 (31.4%)	86 (25.1%)	
Marital status	Married	243 (94.9%)	81 (94.2%)	324 (94.7%)	0.256
	Divorced	8 (3.1%)	1 (1.2%)	9 (2.6%)	
	Widow	5 (2.0%)	4 (4.7%)	9 (2.6%)	
Education	Secondary or less	15 (5.9%)	2 (2.3%)	17 (5.0%)	0.062
	High school	45 (17.6%)	14 (16.3%)	59 (17.3%)	
	Diploma	33 (12.9%)	9 (10.5%)	42 (12.3%)	
	Bachelor	150 (58.6%)	49 (57.0%)	199 (58.2%)	
	Higher education	13 (5.1%)	12 (14.0%)	25 (7.3%)	

*Percentages are presented by columns

**P-value calculated using Chi-square test.

Table 2 Knowledge and perception of the participants about lazy eye

Variables	Agree (%)	Disagree (%)	I do not know (%)
Doctor visit			
Once a year	288 (84.2%)	26 (7.6%)	28 (8.2%)
At pre-school age	326 (95.3%)	3 (1.2%)	12 (3.5%)
Only when needed	106 (31%)	222 (64.9%)	14 (4.1%)
Causes and risk factors*			
Family history of strabismus or eye conditions	162 (47.4%)	46 (13.5%)	134 (39.2%)
Premature birth or small for gestational age	103 (30.1%)	72 (21.1%)	167 (48.8%)
Difference in visual acuity between the eyes	140 (40.9%)	36 (10.5%)	166 (48.5%)
Congenital cataract, hereditary eyelid ptosis, and retinal or optic nerve abnormalities	136 (39.8%)	21 (6.1%)	185 (54.1%)
Symptoms and diagnosis*			
Tilting the head with abnormal eye movements	125 (36.5%)	28 (8.2%)	189 (55.3%)
Visual impairment, squint, and ptosis	125 (36.5%)	23 (6.7%)	194 (56.7%)

Can be asymptomatic	114 (33.3%)	51 (14.9%)	177 (51.8%)
Diagnoses by visual acuity, electrophysiologic studies or Spectral-domain optical coherence tomography of the optic nerve	108 (31.6%)	11 (3.2%)	223 (65.2%)
Can be diagnosed by CT and MRI	72 (21.1%)	56 (16.4%)	214 (62.6%)
Treatment and complications*			
Time of diagnosis affects the prognosis of the disease	258 (75.4%)	7 (2%)	77 (22.5%)
Can be treated by wearing corrective glasses or cover the healthy by a patch	159 (46.5%)	13 (3.8%)	170 (49.7%)
Can be treated by surgery	100 (29.2%)	44 (12.9%)	198 (57.9%)
Lazy eye complications include squint and blindness if left untreated	153 (44.7%)	25 (7.3%)	164 (48%)
Section responsible for raising the awareness			
Ministry of health	273 (79.8%)	18 (5.3%)	51 (14.9%)
Schools and universities	237 (75.7%)	23 (6.7%)	60 (17.5%)
Mass media and social media	259 (75.7%)	23 (6.7%)	72 (21.1%)

*Questions included in the total score of lazy eye knowledge.

Of the total, 40.6% indicated having a child or a relative's child diagnosed with eye disease. After that, participants were asked about the appropriate time to visit the ophthalmologist in a multi-response answer and the answers were as follow; once a year 84.2%, at pre-school age 95.3% and 31% chose only when needed. Although 59.4% have heard about lazy eye before, only 37.1% indicated that they have knowledge about lazy eye. The source of the participants' knowledge was investigated using a multi-response question, which is shown in (Table 3). Thereafter, the participants were directly asked if they have a child diagnosed with lazy eye; the prevalence rate was 12.3%. Furthermore, 13% of them had more than one child affected with amblyopia, while the majority 87% had only one child suffering from the condition. The eye diseases among the children are shown in (Figure 1). The total score variable was significantly associated with age categories. The age range of (18-25) had the highest mean rank, while those whom age is more than 55 had the lowest scores (P-value 0.018). Other variables failed to show any significance with the total score.

Knowledge categories were significantly associated with the variable (have you heard of lazy eye) (P-value<0.001). Similarly, their personal perception of having knowledge about lazy eye was significantly associated with the level of knowledge (P-value<0.001). Regarding the source of information, the following sources of information were significantly associated with level of knowledge internet/social media (P-value=0.005), journals/newspaper (P-value=0.024), relatives/friends (P-value=0.048), and ophthalmologists (P-value<0.001). Finally, having a child with lazy eye was significantly associated with level of knowledge as well (P-value=0.004).

Table 3 Source of information and its association with level of knowledge about lazy eye

Source	n = 342	Level of knowledge			P-value**
		Poor	Good	Total* (%)	
TV	Yes	28 (10.9%)	16 (18.6%)	44 (12.9%)	0.066
	No	228 (89.1%)	70 (81.4%)	298 (87.1%)	
Internet	Yes	42 (16.4%)	26 (30.2%)	68 (19.9%)	0.005
	No	214 (83.6%)	60 (69.8%)	274 (80.1%)	
Journals or newspapers	Yes	9 (4%)	8 (11.1%)	17 (5.7%)	0.024
	No	216 (96%)	64 (88.9%)	280 (94.3%)	
Health awareness campaign	Yes	16 (6.3%)	10 (11.6%)	26 (7.6%)	0.104
	No	240 (93.8%)	76 (88.4%)	316 (92.4%)	
Relatives or friends	Yes	41 (16%)	22 (25.6%)	63 (18.4%)	0.048
	No	215 (84%)	64 (74.4%)	279 (81.6%)	
Ophthalmologist	Yes	49 (19.1%)	41 (47.7%)	90 (26.3%)	<0.001
	No	207 (80.9%)	45 (52.3%)	252 (73.7%)	

*Percentages are presented by columns

**P-value calculated using Chi-square test.

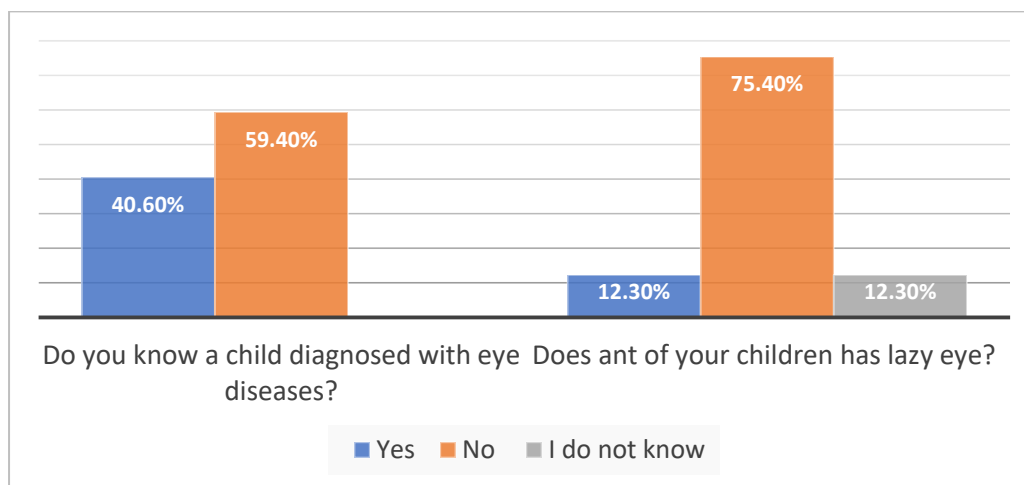


Figure 1 Eye diseases and amblyopia among the children of our participants.

4. DISCUSSION

Amblyopia is one of the most commonly occurring public health problems as it can lead to serious disability in children, especially if not recognized and managed early in the course of the disease (Alsaqr and Masmali, 2019). Amblyopia is defined as diminution of vision, either unilateral or bilateral, due to deprivation of pattern vision or abnormal binocular interaction, for which no cause can be identified (Magdalene et al., 2018). Additionally, it is clinically defined as decreased visual acuity accompanied by one or more amblyogenic factor such as strabismus and high refractive error (Birch, 2013). The prevalence of this disease as reported in a study done in Saudi Arabia is 15.3% in all morbidity diseases present in our community (Darraj et al., 2016). Another study about eye conditions among children reported that strabismus and amblyopia were prevalent in 13.8% of the participants (Banayot, 2016). The main aim of the present study was to assess the knowledge and perception of parents about amblyopia at Al-Baha region in Saudi Arabia. Among 342 participants involved in our study, only 25.1% of them had good knowledge about the disease. This shows the dire need of further education to the parents and the community about the disease especially since it is the most common cause of unilateral visual impairment (Alsaqr and Masmali, 2019). This result was comparable to another study done in Saudi Arabia involving 1,649 participants in different regions of Saudi Arabia; they concluded that 30% of the participants were aware of the disease (Alsaqr and Masmali, 2019). On the other hand, based on a study done in Nigeria, the awareness about amblyopia was only 2.9%, while in India it was 3% (Ebeigbe and Emedike, 2017; Senthilkumar et al., 2013).

Sociodemographic characteristics

As for the sociodemographic characteristics, most of our participants were female parents they comprised 83.3% of the participants, even though the female/male ratio may be biased, females had better knowledge compared to males. When comparable to the literature in another study by Alsaqr and Masmali (2019) involving almost the same number of male and female participants, females had better knowledge (16.2%) compared to males (13.8%). Furthermore, the marital status was found to play a role as they had more adequate knowledge compared to other marital statuses, which was observed in the literature as well (Alsaqr and Masmali, 2019). Finally, the better the educational level of the parents is, the more aware they are about the disease, since parents with bachelors' degree comprised the highest percentage (57%) of participants with good knowledge.

Assessment of Knowledge about Amblyopia

Participants were asked several questions regarding amblyopia causes, risk factors, symptoms, diagnosis and management. More than 50% of them, when asked about some of the causes and risk factors of the disease such as premature birth or family history of strabismus replied with either "I do not know" or "Disagree". This was almost the case when they were asked questions in regards to symptoms, diagnosis and management. These results are in line with what was found in another study done in Saudi Arabia when they assessed specific knowledge questions about amblyopia, they found that participants having adequate knowledge in each section were as follows; definition 35.9%, causes 0%, symptoms 1%, risk factors 5.7%, management 24.4% (Basheikh et al., 2021). Moreover, when parents were asked about the appropriate time to visit an ophthalmologist, they answered with the following; once a year 84.2%, at preschool age 95.3%, only when needed 31%.

Sources of Knowledge

The main sources of knowledge found in this study arranged based on what provides more adequate knowledge were as follows; ophthalmologist 47.7%, internet 30.2%, relatives or friends 25.6%, TV 18.6%, health awareness campaigns 11.6%, and journals or newspapers 11.1%. In comparison, the sources of knowledge as mentioned in another study are; physicians 19%, internet 16%, TV 7.7%, relatives 7%, newspapers 4% (Basheikh et al., 2021). Furthermore, the sources of knowledge regarding strabismus, which is one of most common causes of amblyopia, as mentioned in an Indian study, were mainly the internet (81.3%) for those with higher educational status, and relatives (91.1%) for those with lower educational class (Singh et al., 2017).

5. CONCLUSION

In conclusion, amblyopia is a major cause of visual abnormalities and defects leading to disability in children. Furthermore, this study and other studies suggest that there is a huge lack of knowledge regarding amblyopia in terms of its definition, causes, risk factors, diagnosis and treatment. Additionally, due to this lack of knowledge, the disease goes underreported and unrecognized in a lot of cases leading to its deleterious complications that can interfere with the child's educational and social life. Thus, increasing the awareness about lazy eye plays a crucial role in recognizing and eventually managing the condition.

Ethical approval

The study was approved by the scientific research and ethical committee of Al-Baha University. Approval number/ REC/SUR/BU-FM/2021/0108.

Authors' contributions

Abdullah Abu Melha did the design and data acquisition and reviewed the final manuscript. Mahadi Abdellatif Bashir did the literature review, handled the data, and reviewed the final manuscript. Mostafa Mohamed Embaby did the data analysis, literature search, manuscript preparation, and final approval. Fatimah Hamad AL Hamad did the results and manuscript writing and reviewed the final manuscript. Ameera Faisal Alghamdi handled the data, contributed to the results writing, helped in the methodology and approved the final manuscript.

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Conflict of interest

The authors declare that they have no conflict of interest.

Data and materials availability

All data associated with this study are presented in the paper.

REFERENCES AND NOTES

1. Aldebasi YH. Prevalence of amblyopia in primary school children in Qassim province, Kingdom of Saudi Arabia. *Middle East Afr J of ophthalmol* 2015; 22(1):86.
2. Alsaqr AM, Masmali AM. The awareness of amblyopia among parents in Saudi Arabia. *Ther Adv Ophthalmol* 2019; 11(6):251584141986810.
3. Banayot RG. A retrospective analysis of eye conditions among children attending St. John Eye Hospital, Hebron, Palestine. *BMC Res Notes* 2016; 9(1):202.
4. Basheikh A, Alhibshi N, Bamakrid M, Baqais R, Basendwah M, Howldar S. Knowledge and attitudes regarding amblyopia among parents in Jeddah, Saudi Arabia: a cross-sectional study. *BMC Res Notes* 2021; 14(1):1–7.
5. Birch EE. Amblyopia and binocular vision. *Prog Retin Eye Res* 2013; 33(1):67–84.
6. Bukhari D, Alhibshi N, Alzahrani N, Aljohani M, Madani F. Awareness, perceptions and knowledge of strabismus among pediatrics and ophthalmology clinics attendees in

- king Abdulaziz university hospital, Jeddah. Available from: <https://pesquisa.bvsalud.org/portal/resource/pt/sea-188532>
7. Carlton J, Kaltenthaler E. Amblyopia and quality of life: a systematic review. *Eye* 2011; 25(4):403-13.
 8. Darraj A, Barakat W, Kenani M, Shajry R, Khawaji A, Bakri S et al. Common eye diseases in children in Saudi Arabia (Jazan). *Ophthalmol eye dis* 2016; 8:OED-S39055.
 9. Ebeigbe JA, Emedike CM. Parents' awareness and perception of children's eye diseases in Nigeria. *J optomet* 2017; 10(2):104-10.
 10. Magdalene D, Bhattacharjee H, Choudhury M, Multani P K, Singh A, Deshmukh S et al. Community outreach: An indicator for assessment of prevalence of amblyopia. *Indian J Ophthalmol* 2018; 66(7):940.
 11. Senthilkumar D, Balasubramaniam SM, Kumaran SE, Ramani KK. Parents' awareness and perception of children's eye diseases in Chennai, India. *Optomet Vis Sci* 2013; 90(12):1462-6.
 12. Singh A, Rana V, Patyal S, Kumar S, Mishra SK, Sharma VK. To assess knowledge and attitude of parents toward children suffering from strabismus in Indian subcontinent. *Indian J ophthalmol* 2017; 65(7):603.